

generating a plurality of samples by normalizing a portion of said first audio data to said second sampling rate, said portion of said first audio data being normalized corresponding to an overlapping portion of said common audio signal sampled at said first sampling rate; and

cross-fading pairs of samples, each pair substantially corresponding to a playback time, one sample of each pair being selected from one of said plurality of samples, the other sample of each pair being selected from a portion of said second audio data, said portion of said second audio data being selected corresponding to said overlapping portion of said common audio signal sampled at said second sampling rate.

2. (As Originally Presented) The method as defined in Claim 1, wherein said cross-fading includes applying a first cross-fade weight to a first sample of each of said pair of samples to obtain a first contribution, applying a second cross-fade weight to a second sample of each of said pair of samples to obtain a second contribution, and combining said first and second contributions to generate a cross-fade sample.

3. (As Amended Herein) A method for cross-fading between first and second received streams representing the same original audio signal, the method comprising the steps of:

receiving in a receive buffer first audio data representing a time period t_1 and sampled at a first target sampling rate of said original audio signal, said first audio data contained within said first stream;

decoding said first audio data to generate first audio samples;

receiving in said receive buffer second audio data representing a time period t_2 of said original audio signal and sampled at a second target sampling rate different from said first target sampling rate, said second audio data from said second stream, said time period t_1 and t_2 overlapping by a time period t_3 in said original audio signal;

decoding said second audio data to generate second audio samples;

resampling said second audio samples in accordance with said first target sampling rate to generate second resampled audio samples, each of said second resampled audio samples substantially corresponding in time to a respective one of said first audio samples to form a sample pair; and

AD cross-fading each sample pair corresponding to a time within said time period t_3 , by applying a first cross-fade weight to a first sample of said sample pair to obtain a first contribution, by applying a second cross-fade weight to a second sample of said sample pair to obtain a second contribution, and by combining said first and second contributions.

4. (As Amended Herein) The method as described in Claim 3, wherein said first stream represents said original audio signal at a first sampling rate and said second stream represents said original audio signal at a second sampling rate.

5. (As Originally Presented) The method as described in Claim 4, wherein each applied first cross-fade weight represents a value between 1 and 0, and the sum of said first cross-fade weight and said second cross-fade weight applied to each said sample pair is 1.

6. (As Originally Presented) The method as described in Claim 5, wherein each applied first cross-fade weight represents a point along a curve defined by one-half cycle of the cosine function offset and scaled to begin at a value of one and end at a value of zero.

7. (As Amended Herein) A system for cross-fading between first and second received streams representing an original audio signal, said system comprising:

AF a receive buffer storing a received stream;

a decoder decoding said received stream from said receive buffer into digital samples;

a sample-rate converter resampling said digital samples in accordance with a target sampling rate; and

a cross-fader operative to cross-fade first resampled digital samples from said first stream with resampled digital samples from said second stream, said first resampled digital samples corresponding to an overlap in time of said original audio signal.

AS 8. (As Amended Herein) The system as described in Claim 7, wherein said cross-fader applies cross-fade weights to paired resampled samples from said first and second streams to generate cross-faded samples, each of said pairs of resampled samples substantially corresponding to a playback time.

9. (As Originally Presented) The system as described in Claim 8, wherein said cross-fader applies a first cross-fade weight to a first of each pair of said resampled samples and

applies a second cross-fade weight to a second of each pair of said resampled samples, said first and second cross-fade weights summing to one.

10. (As Amended Herein) A system for cross-fading audio data, the system comprising:

means for receiving transmitted audio data;

means for decoding audio data from two different audio streams;

AP means for resampling audio data from two different audio streams to a common sampling rate, said audio streams encoded at different sampling rates; and

means for cross-fading resampled audio data from first and second portions of said two different audio streams, said audio data overlapping in time, said two different audio streams representing the same original audio signal.

11. (New) A method for cross-fading a first and second stream that respectively comprises first and second audio data corresponding to a common audio signal, said first audio data being generated by compressing said audio source at a first compression rate and said second audio data being generated by compressing said audio source at a second compression rate, said method comprising:

receiving and decompressing said first audio data within said first streams;

receiving and decompressing said second audio data within said second stream;

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cross-fading pairs of samples, each pair substantially corresponding to a playback time, one sample of each pair being selected from a portion of said first decompressed audio data, said other sample of each pair being selected from a portion of said second decompressed audio data, said portion of said second decompressed audio data being selected to correspond to an overlapping portion of said common audio signal compressed at said first compression rate.

12. (New) The method for cross-fading as recited in Claim 11, wherein said first compression rate is different than said second compression rate.

13. (New) The method for cross-fading as recited in Claim 11, further comprising playing as an audio stream a portion of said first audio data, said cross-faded pairs of samples and said portion of said second audio data.

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14. (New) The method for cross-fading as recited in Claim 11, wherein said first audio source is pre-recorded music.

15. (New) A computer readable media having a set of instructions that when executed by a processing system comprises a method for cross-fading a first and second stream that respectively includes a first and second audio data corresponding to a common audio signal, said first audio data being generated by compressing an audio source at a first compression rate and said second audio data being generated by compressing said audio source at a second compression rate, said method comprising:

receiving and decompressing said first audio data within said first audio streams;

receiving and decompressing said second audio data within said second audio stream; and

A7 cross-fading pairs of samples, each pair substantially corresponding to a playback time, one sample of each pair being selected from a portion of said first decompressed audio data, said other sample of each pair being selected from a portion of said second decompressed audio data, said portion of said second decompressed audio data being selected to correspond to an overlapping portion of said common audio signal compressed at said first compression rate.

16. (New) The computer readable media as recited in Claim 15, wherein said first compression rate is different than said second compression rate.

17. (New) The computer readable media as recited in Claim 15, further comprising playing as an audio stream a portion of said first audio data, said cross-faded pairs of samples and said portion of said second audio data.

REMARKS

Procedural History

Claims 1-10 are pending in the application.

Response to Rejection of Claims 1-10 Under 35 U.S.C. § 103

In the August 14, 2001 Office Action, the Examiner rejected Claims 1-10 under 35 U.S.C. § 103, as being unpatentable over U.S. Patent No. 5,768,126 to Frederick ("Frederick") in view of U.S. Patent No. 6,049,766 to Laroche ("Laroche").